



sequence listing.ST25.txt
SEQUENCE LISTING

<110> the Johns Hopkins University School of Medicine

<120> Cloned Mammalian Polyamine Oxidase

<130> 07410002aa

<140> 10/733,020

<141> 2003-12-12

<150> US 60/297,815

<151> 2001-06-13

<150> PCT/US02/18666

<151> 2002-06-13

<160> 42

<170> PatentIn version 3.2

<210> 1

<211> 1894

<212> DNA

<213> Homo sapiens

<400> 1

```
cgccgctcgc cgcagactta cttccccggc tcagcaggga aagggttccta gaaggtgagc      60
gcggaacggta tgcaaagttg tgaatccagt ggtgacagtg cggaatgaccc tctcagtcgc      120
ggcctacgga gaagggggaca gcctcgtgtg gtggtgatcg gcgccggctt ggctggcctg      180
gctgcagcca aagcacttct tgagcagggt ttcacggatg tctactgtgct tgaggcttcc      240
agccacatcg gaggccgtgt gcagagtgtg aaacttggac acgccacctt tgagctggga      300
gccacctgga tccatggctc ccatgggaac cctatctatc atctagcaga agccaacggc      360
ctcctggaag agacaaccga tggggaacgc agcgtgggcc gcatcagcct ctattccaag      420
aatggcgtgg cctgctacct taccaaccac ggccgcagga tccccaagga cgtggttgag      480
gaattcagcg atttatacaa cgaggtctat aacttgaccc aggagttctt ccggcacgat      540
aaaccagtca atgctgaaag tcaaaatagc gtgggggtgt tcacccgaga ggaggtgctg      600
aaccgcatca ggaatgaccc tgacgaccca gaggtctacca agcgccctgaa gctcgccatg      660
atccagcagt acctgaaggt ggagagctgt gagagcagct cacacagcat ggacgaggtg      720
tccttgagcg ccttcgggga gtggaccgag atccccggcg ctcaccacat catcccctcg      780
ggcttcatgc ggggttgagg gctgctggcg gagggcatcc ctgcccacgt catccagcta      840
gggaaacctg tccgctgcat tctactggac caggcctcag cccgccccag aggccctgag      900
attgagcccc ggggtgaggg cgaccacaat cacgacactg gggaggggtg ccaggggtgga      960
gaggagcccc gggggggcag gtgggatgag gatgagcagt ggtcgggtggt ggtggagtgc     1020
gaggaccgtg agctgatccc ggcggaccat gtgattgtga ccgtgtcgct aggtgtgcta     1080
```

sequence listing.ST25.txt

```

aagaggcagt acaccagttt cttccggcca ggcctgcca cagagaagggt ggctgccatc 1140
caccgcctgg gcattggcac caccgacaag atctttctgg aattcgagga gcccttctgg 1200
ggccctgagt gcaacagcct acagtttgtg tgggaggacg aagcggagag ccacaccctc 1260
acctaccac ctgagctctg gtaccgcaag atctgcggct ttgatgtcct ctaccgcct 1320
gagcgctacg gccatgtgct gagcggctgg atctgcgggg aggaggccct cgtcatggag 1380
aagtgtgatg acgaggcagt ggccgagatc tgcacggaga tgctgcgtca gttcacaggg 1440
aaccccaaca ttccaaaacc tcggcgaatc ttgcgctcgg cctggggcag caacccttac 1500
ttccgtggct cctattcata cacgcagggt ggctccagcg gggcggatgt ggagaagctg 1560
gccaagcccc tgccgtacac ggagagctca aagacagcgc ccatgcaggt gctgttttcc 1620
ggtgaggcca cccaccgcaa gtactattcc accaccacg gtgctctgct gtccggccag 1680
cgtgaggctg cccgcctcat tgagatgtac cgagacctct tccagcaggg gacctgagg 1740
ctgtcctcgc tgctgagaag agccactaac tcgtgacctc cagcctgccc cttgctgccg 1800
tgtgtcctg ctttctgat cctctgtaga aaggattttt atcttctgta gagctagccg 1860
ccctgactgc cttcagacct ggcctgtag cttt 1894

```

<210> 2
 <211> 555
 <212> PRT
 <213> Homo sapiens

<400> 2

```

Met Gln Ser Cys Glu Ser Ser Gly Asp Ser Ala Asp Asp Pro Leu Ser
1          5          10          15

Arg Gly Leu Arg Arg Arg Gly Gln Pro Arg Val Val Val Ile Gly Ala
20          25          30

Gly Leu Ala Gly Leu Ala Ala Ala Lys Ala Leu Leu Glu Gln Gly Phe
35          40          45

Thr Asp Val Thr Val Leu Glu Ala Ser Ser His Ile Gly Gly Arg Val
50          55          60

Gln Ser Val Lys Leu Gly His Ala Thr Phe Glu Leu Gly Ala Thr Trp
65          70          75          80

Ile His Gly Ser His Gly Asn Pro Ile Tyr His Leu Ala Glu Ala Asn
85          90          95

Gly Leu Leu Glu Glu Thr Thr Asp Gly Glu Arg Ser Val Gly Arg Ile
100         105         110

```

sequence listing.ST25.txt

Ser Leu Tyr Ser Lys Asn Gly Val Ala Cys Tyr Leu Thr Asn His Gly
115 120 125

Arg Arg Ile Pro Lys Asp Val Val Glu Glu Phe Ser Asp Leu Tyr Asn
130 135 140

Glu Val Tyr Asn Leu Thr Gln Glu Phe Phe Arg His Asp Lys Pro Val
145 150 155 160

Asn Ala Glu Ser Gln Asn Ser Val Gly Val Phe Thr Arg Glu Glu Val
165 170 175

Arg Asn Arg Ile Arg Asn Asp Pro Asp Asp Pro Glu Ala Thr Lys Arg
180 185 190

Leu Lys Leu Ala Met Ile Gln Gln Tyr Leu Lys Val Glu Ser Cys Glu
195 200 205

Ser Ser Ser His Ser Met Asp Glu Val Ser Leu Ser Ala Phe Gly Glu
210 215 220

Trp Thr Glu Ile Pro Gly Ala His His Ile Ile Pro Ser Gly Phe Met
225 230 235 240

Arg Val Val Glu Leu Leu Ala Glu Gly Ile Pro Ala His Val Ile Gln
245 250 255

Leu Gly Lys Pro Val Arg Cys Ile His Trp Asp Gln Ala Ser Ala Arg
260 265 270

Pro Arg Gly Pro Glu Ile Glu Pro Arg Gly Glu Gly Asp His Asn His
275 280 285

Asp Thr Gly Glu Gly Gly Gln Gly Gly Glu Glu Pro Arg Gly Gly Arg
290 295 300

Trp Asp Glu Asp Glu Gln Trp Ser Val Val Val Glu Cys Glu Asp Arg
305 310 315 320

Glu Leu Ile Pro Ala Asp His Val Ile Val Thr Val Ser Leu Gly Val
325 330 335

Leu Lys Arg Gln Tyr Thr Ser Phe Phe Arg Pro Gly Leu Pro Thr Glu
340 345 350

Lys Val Ala Ala Ile His Arg Leu Gly Ile Gly Thr Thr Asp Lys Ile
355 360 365

sequence listing.ST25.txt

Phe Leu Glu Phe Glu Glu Pro Phe Trp Gly Pro Glu Cys Asn Ser Leu
370 375 380

Gln Phe Val Trp Glu Asp Glu Ala Glu Ser His Thr Leu Thr Tyr Pro
385 390 395 400

Pro Glu Leu Trp Tyr Arg Lys Ile Cys Gly Phe Asp Val Leu Tyr Pro
405 410 415

Pro Glu Arg Tyr Gly His Val Leu Ser Gly Trp Ile Cys Gly Glu Glu
420 425 430

Ala Leu Val Met Glu Lys Cys Asp Asp Glu Ala Val Ala Glu Ile Cys
435 440 445

Thr Glu Met Leu Arg Gln Phe Thr Gly Asn Pro Asn Ile Pro Lys Pro
450 455 460

Arg Arg Ile Leu Arg Ser Ala Trp Gly Ser Asn Pro Tyr Phe Arg Gly
465 470 475 480

Ser Tyr Ser Tyr Thr Gln Val Gly Ser Ser Gly Ala Asp Val Glu Lys
485 490 495

Leu Ala Lys Pro Leu Pro Tyr Thr Glu Ser Ser Lys Thr Ala Pro Met
500 505 510

Gln Val Leu Phe Ser Gly Glu Ala Thr His Arg Lys Tyr Tyr Ser Thr
515 520 525

Thr His Gly Ala Leu Leu Ser Gly Gln Arg Glu Ala Ala Arg Leu Ile
530 535 540

Glu Met Tyr Arg Asp Leu Phe Gln Gln Gly Thr
545 550 555

<210> 3
<211> 1735
<212> DNA
<213> Homo sapiens

<400> 3
cgccgctcgc cgcagactta cttccccggc tcagcagggg aaggttccta gaaggtgagc 60
gcggacggta tgcaaagttg tgaatccagt ggtgacagtg cggatgaccc tctcagtcgc 120
ggcctacgga gaaggggaca gcctcgtgtg gtggtgatcg gcgccggctt ggctggcctg 180
gctgcagcca aagcacttct tgagcagggg ttcacggatg tcactgtgct tgaggcttcc 240

sequence listing.ST25.txt

```

agccacgtcg gaggccgtgt gcagagtgtg aaacttggac acgccacctt tgagccggga 300
gccacctgga tccatggctc ccatgggaac cctatctatc atctagcaga agccaacggc 360
ctcctggaag agacaaccga tggggaacgc agcgtgggcc gcatcagcct ctattccaag 420
aatggcgtgg cctgctacct taccaaccac ggccgcagga tccccaagga cgtggttgag 480
gaattcagcg atttatacaa cgaggtctat aacttgaccc aggagtctt ccggcacgat 540
aaaccagtca atgctgaaag tcaaaatagc gtgggggtgt tcacccgaga ggaggtgcgt 600
aaccgcatca ggaatgaccc tgacgacca gaggtacca agcgcctgaa gctcgccatg 660
atccagcagt acctgaaggt ggagagctgt gagagcagct cacacagcat ggacgaggtg 720
tccctgagcg ccttcgggga gtggaccgag atccccggcg ctaccacat catcccctcg 780
ggcttcatgc gggttgtgga gctgctggcg gagggcatcc ctgcccacgt catccagcta 840
gggaaacctg tccgctgcat tctctgggac caggcctcag cccgccccag aggccctgag 900
attgagcccc ggggtgtgct aaagaggcag tacaccagtt tcttccggcc aggcctgccc 960
acagagaagg tggctgccat ccaccgcctg ggcattggca ccaccgaca gatctttctg 1020
gaattcgagg agcccttctg gggccctgag tgcaacagcc tacagtttgt gtgggaggac 1080
gaagcggaga gccacacctt cacctacca cctgagctct ggtaccgaa gatctgcggc 1140
tttgatgtcc tctacccgcc tgagcgctac ggccatgtgc tgagcggtg gatctgcggg 1200
gaggaggccc tcgtcatgga gaggtgtgat gacgaggcag tggccgagat ctgcacggag 1260
atgctgcgtc agttcacagg gaacccaac attccaaaac ctgcggcaat cttgcgctcg 1320
gcctggggca gcaaccctta cttccgcggc tcctattcat acacgcaggt gggctccagc 1380
ggggcggatg tggagaagct ggccaagccc ctgccgtaca cagagagctc aaagacagcg 1440
cccatgcagg tgctgttttc cggtagggcc acccaccgca agtactattc caccaccac 1500
ggtgctctgc tgtccggcca gcgtgaggct gcccgcctca ttgagatgta ccgagacctc 1560
ttccagcagg ggacctgagg gctgtcctcg ctgctgagaa gagccactaa ctcgtgacct 1620
ccagcctgcc cttgctgcc gtgtgctcct gccttcctga tcctctgtag aaaggatttt 1680
tatcttctgt agagctagcc gccctgactg cttcagacc tggccctgta gcttt 1735

```

```

<210> 4
<211> 502
<212> PRT
<213> Homo sapiens

```

```

<400> 4

```

```

Met Gln Ser Cys Glu Ser Ser Gly Asp Ser Ala Asp Asp Pro Leu Ser
1          5          10          15

```

sequence listing.ST25.txt

Arg Gly Leu Arg Arg Arg Gly Gln Pro Arg Val Val Val Ile Gly Ala
20 25 30

Gly Leu Ala Gly Leu Ala Ala Ala Lys Ala Leu Leu Glu Gln Gly Phe
35 40 45

Thr Asp Val Thr Val Leu Glu Ala Ser Ser His Val Gly Gly Arg Val
50 55 60

Gln Ser Val Lys Leu Gly His Ala Thr Phe Glu Pro Gly Ala Thr Trp
65 70 75 80

Ile His Gly Ser His Gly Asn Pro Ile Tyr His Leu Ala Glu Ala Asn
85 90 95

Gly Leu Leu Glu Glu Thr Thr Asp Gly Glu Arg Ser Val Gly Arg Ile
100 105 110

Ser Leu Tyr Ser Lys Asn Gly Val Ala Cys Tyr Leu Thr Asn His Gly
115 120 125

Arg Arg Ile Pro Lys Asp Val Val Glu Glu Phe Ser Asp Leu Tyr Asn
130 135 140

Glu Val Tyr Asn Leu Thr Gln Glu Phe Phe Arg His Asp Lys Pro Val
145 150 155 160

Asn Ala Glu Ser Gln Asn Ser Val Gly Val Phe Thr Arg Glu Glu Val
165 170 175

Arg Asn Arg Ile Arg Asn Asp Pro Asp Asp Pro Glu Ala Thr Lys Arg
180 185 190

Leu Lys Leu Ala Met Ile Gln Gln Tyr Leu Lys Val Glu Ser Cys Glu
195 200 205

Ser Ser Ser His Ser Met Asp Glu Val Ser Leu Ser Ala Phe Gly Glu
210 215 220

Trp Thr Glu Ile Pro Gly Ala His His Ile Ile Pro Ser Gly Phe Met
225 230 235 240

Arg Val Val Glu Leu Leu Ala Glu Gly Ile Pro Ala His Val Ile Gln
245 250 255

Leu Gly Lys Pro Val Arg Cys Ile His Trp Asp Gln Ala Ser Ala Arg
260 265 270

sequence listing.ST25.txt

Pro Arg Gly Pro Glu Ile Glu Pro Arg Gly Val Leu Lys Arg Gln Tyr
275 280 285

Thr Ser Phe Phe Arg Pro Gly Leu Pro Thr Glu Lys Val Ala Ala Ile
290 295 300

His Arg Leu Gly Ile Gly Thr Thr Asp Lys Ile Phe Leu Glu Phe Glu
305 310 315 320

Glu Pro Phe Trp Gly Pro Glu Cys Asn Ser Leu Gln Phe Val Trp Glu
325 330 335

Asp Glu Ala Glu Ser His Thr Leu Thr Tyr Pro Pro Glu Leu Trp Tyr
340 345 350

Arg Lys Ile Cys Gly Phe Asp Val Leu Tyr Pro Pro Glu Arg Tyr Gly
355 360 365

His Val Leu Ser Gly Trp Ile Cys Gly Glu Glu Ala Leu Val Met Glu
370 375 380

Arg Cys Asp Asp Glu Ala Val Ala Glu Ile Cys Thr Glu Met Leu Arg
385 390 395 400

Gln Phe Thr Gly Asn Pro Asn Ile Pro Lys Pro Arg Arg Ile Leu Arg
405 410 415

Ser Ala Trp Gly Ser Asn Pro Tyr Phe Arg Gly Ser Tyr Ser Tyr Thr
420 425 430

Gln Val Gly Ser Ser Gly Ala Asp Val Glu Lys Leu Ala Lys Pro Leu
435 440 445

Pro Tyr Thr Glu Ser Ser Lys Thr Ala Pro Met Gln Val Leu Phe Ser
450 455 460

Gly Glu Ala Thr His Arg Lys Tyr Tyr Ser Thr Thr His Gly Ala Leu
465 470 475 480

Leu Ser Gly Gln Arg Glu Ala Ala Arg Leu Ile Glu Met Tyr Arg Asp
485 490 495

Leu Phe Gln Gln Gly Thr
500

<210> 5
<211> 799

sequence listing.ST25.txt

<212> DNA
<213> Homo sapiens

<400> 5
cgccgctcgc cgcagactta cttccccggc tcagcagggg aagggttccta gaagggtgagc 60
gcggacggta tgcaaagttg tgaatccagt ggtgacagtg cggatgaccc tctcagtcgc 120
ggcctacgga gaaggggaca gcctcgtgtg gtggtgatcg gcgccggcctt ggctggcctg 180
gctgcagcca aagcacttct tgagcagggg ttcacggatg tactgtgct tgaggcttcc 240
agccacgtcg gaggccgtgt gcagagtgtg aaacttggac acgccacctt tgagctggga 300
gccacctgga tccatggctc ccatgggaac cctatctatc atctagcaga agccaacggc 360
ctcctggaag agacaaccga tggggaacgc agcgtgggcc gcatcagcct ctattccaag 420
aatggcgtgg cctgctacct taccaaccac ggccgcagga tccccaagga cgtggttgag 480
gaattcagcg atttatacaa cgagcccatg caggtgctgt tttccggtga ggccaccac 540
cgcaagtact attccaccac ccacggtgct ctgctgtccg gccagcgtga ggctgcccgc 600
ctcattgaga tgtaccgaga cctcttcag caggggacct gagggctgtc ctcgctgctg 660
agaagagcca ctaactcgtg acctccagcc tgccccttgc tgccgtgtgc tcctgccttc 720
ctgatcctct gtagaaagga tttttatctt ctgtagagcc agccgccctg actgccttca 780
gacctggccc tgtagcttt 799

<210> 6
<211> 190
<212> PRT
<213> Homo sapiens

<400> 6
Met Gln Ser Cys Glu Ser Ser Gly Asp Ser Ala Asp Asp Pro Leu Ser
1 5 10 15
Arg Gly Leu Arg Arg Arg Gly Gln Pro Arg Val Val Val Ile Gly Ala
20 25 30
Gly Leu Ala Gly Leu Ala Ala Ala Lys Ala Leu Leu Glu Gln Gly Phe
35 40 45
Thr Asp Val Thr Val Leu Glu Ala Ser Ser His Val Gly Gly Arg Val
50 55 60
Gln Ser Val Lys Leu Gly His Ala Thr Phe Glu Leu Gly Ala Thr Trp
65 70 75 80
Ile His Gly Ser His Gly Asn Pro Ile Tyr His Leu Ala Glu Ala Asn
85 90 95

sequence listing.ST25.txt

Gly Leu Leu Glu Glu Thr Thr Asp Gly Glu Arg Ser Val Gly Arg Ile
100 105 110

Ser Leu Tyr Ser Lys Asn Gly Val Ala Cys Tyr Leu Thr Asn His Gly
115 120 125

Arg Arg Ile Pro Lys Asp Val Val Glu Glu Phe Ser Asp Leu Tyr Asn
130 135 140

Glu Pro Met Gln Val Leu Phe Ser Gly Glu Ala Thr His Arg Lys Tyr
145 150 155 160

Tyr Ser Thr Thr His Gly Ala Leu Leu Ser Gly Gln Arg Glu Ala Ala
165 170 175

Arg Leu Ile Glu Met Tyr Arg Asp Leu Phe Gln Gln Gly Thr
180 185 190

<210> 7
<211> 1825
<212> DNA
<213> Homo sapiens

<400> 7
cgccgctcgc cgcagactta cttccccggc tcagcagggg aaggttccta gaaggtgagc 60
gcggacggta tgcaaagttg tgaatccagt ggtgacagtg cggatgaccc tctcagtcgc 120
ggcctacgga gaaggggaca gcctcgtgtg gtggtgatcg gcgccggctt ggctggcctg 180
gctgcagcca aagcacttct tgagcagggt ttcacggatg tcaactgtgct tgaggcttcc 240
agccacatcg gagggcgtgt gcagagtgtg aaacttgga acgccacctt tgagctggga 300
gccacctgga tccatggctc ccatgggaac cctatctatc atctagcaga agccaacggc 360
ctcctggaag agacaaccga tggggaacgc agcgtgggcc gcatcagcct ctattccaag 420
aatggcgtgg cctgctacct taccaaccac ggccgcagga tcccaagga cgtggttgag 480
gaattcagcg atttatacaa cgaggtctat aacttgaccc aggagttctt ccggcacgat 540
aaaccagtca atgctgaaag tcaaaatagc gtgggggtgt tcacccgaga ggaggtgcgt 600
aaccgcatca ggaatgaccc tgacgacca gaggctacca agcgccctgaa gctcgccatg 660
atccagcagt acctgaaggt ggagagctgt gagagcagct cacacagcat ggacgaggtg 720
tccctgagcg ccttcgggga gtggaccgag atccccggcg ctaccacat catcccctcg 780
ggcttcatgc gggttgtgga gctgctggcg gagggcatcc ctgccacgt catccagcta 840
gggaaacctg tccgctgcat tcaactgggac caggcctcag cccgccccag aggccctgag 900
attgagcccc ggggtgtgct aaagaggcag tacaccagtt tcttccggcc aggcctgccc 960

sequence listing.ST25.txt

acagagaagg tggctgccat ccaccgctg ggcattggca ccaccgacaa gatctttctg 1020
gaattagagg agcccttctg gggccctgag tgcaacagcc tacagtttgt gtgggaggac 1080
gaagcggaga gccacaccct cacctaccca cctgagctct ggtaccgcaa gatctgcggc 1140
tttgatgtcc tctaccgccc tgagcgctac ggccatgtgc tgagcggctg gatctgcggg 1200
ggggaggccc tcgtcatgga gaagtgtgat gacgaggcag tggccgagat ctgcacggag 1260
atgctgcgtc agttcacagg gaacccaac attccaaaac ctcggcgaat cttgcgctcg 1320
gcctggggca gcaaccctta cttccgcggc tcctattcat acacgcaggt gggctccagc 1380
ggggcggatg tggagaagct ggccaagccc ctgccgtaca cagagagctc aaagacagcg 1440
catggaagct ccacaaagca gcagcctggt caccttttct cttccaagtg cccagaacag 1500
ccccctgatg ctaacagggg cgccgtaaag cccatgcagg tgctgttttc cggtgaggcc 1560
accaccgca agtactattc caccaccac ggtgctctgc tgtccggcca gcgtgaggct 1620
gcccgcctca ttgagatgta ccgagacctc ttccagcagg ggacctgagg gctgtcctcg 1680
ctgctgagaa gagccactaa ctcgtgacct ccagcctgcc cttgctgcc gtgtgctcct 1740
gccttcctga tcctctgtag aaaggatttt tatcttctgt agagctagcc gccctgactg 1800
ccttcagacc tggccctgta gcttt 1825

<210> 8
<211> 532
<212> PRT
<213> Homo sapiens

<400> 8

Met Gln Ser Cys Glu Ser Ser Gly Asp Ser Ala Asp Asp Pro Leu Ser
1 5 10 15

Arg Gly Leu Arg Arg Arg Gly Gln Pro Arg Val Val Val Ile Gly Ala
20 25 30

Gly Leu Ala Gly Leu Ala Ala Ala Lys Ala Leu Leu Glu Gln Gly Phe
35 40 45

Thr Asp Val Thr Val Leu Glu Ala Ser Ser His Ile Gly Gly Arg Val
50 55 60

Gln Ser Val Lys Leu Gly His Ala Thr Phe Glu Leu Gly Ala Thr Trp
65 70 75 80

Ile His Gly Ser His Gly Asn Pro Ile Tyr His Leu Ala Glu Ala Asn
85 90 95

Gly Leu Leu Glu Glu Thr Thr Asp Gly Glu Arg Ser Val Gly Arg Ile
Page 10

100

Ser Leu Tyr Ser Lys Asn Gly Val Ala Cys Tyr Leu Thr Asn His Gly
115 120 125

Arg Arg Ile Pro Lys Asp Val Val Glu Glu Phe Ser Asp Leu Tyr Asn
130 135 140

Glu Val Tyr Asn Leu Thr Gln Glu Phe Phe Arg His Asp Lys Pro Val
145 150 155 160

Asn Ala Glu Ser Gln Asn Ser Val Gly Val Phe Thr Arg Glu Glu Val
165 170 175

Arg Asn Arg Ile Arg Asn Asp Pro Asp Asp Pro Glu Ala Thr Lys Arg
180 185 190

Leu Lys Leu Ala Met Ile Gln Gln Tyr Leu Lys Val Glu Ser Cys Glu
195 200 205

Ser Ser Ser His Ser Met Asp Glu Val Ser Leu Ser Ala Phe Gly Glu
210 215 220

Trp Thr Glu Ile Pro Gly Ala His His Ile Ile Pro Ser Gly Phe Met
225 230 235 240

Arg Val Val Glu Leu Leu Ala Glu Gly Ile Pro Ala His Val Ile Gln
245 250 255

Leu Gly Lys Pro Val Arg Cys Ile His Trp Asp Gln Ala Ser Ala Arg
260 265 270

Pro Arg Gly Pro Glu Ile Glu Pro Arg Gly Val Leu Lys Arg Gln Tyr
275 280 285

Thr Ser Phe Phe Arg Pro Gly Leu Pro Thr Glu Lys Val Ala Ala Ile
290 295 300

His Arg Leu Gly Ile Gly Thr Thr Asp Lys Ile Phe Leu Glu Leu Glu
305 310 315 320

Glu Pro Phe Trp Gly Pro Glu Cys Asn Ser Leu Gln Phe Val Trp Glu
325 330 335

Asp Glu Ala Glu Ser His Thr Leu Thr Tyr Pro Pro Glu Leu Trp Tyr
340 345 350

sequence listing.ST25.txt

Arg Lys Ile Cys Gly Phe Asp Val Leu Tyr Pro Pro Glu Arg Tyr Gly
355 360 365

His Val Leu Ser Gly Trp Ile Cys Gly Gly Glu Ala Leu Val Met Glu
370 375 380

Lys Cys Asp Asp Glu Ala Val Ala Glu Ile Cys Thr Glu Met Leu Arg
385 390 395 400

Gln Phe Thr Gly Asn Pro Asn Ile Pro Lys Pro Arg Arg Ile Leu Arg
405 410 415

Ser Ala Trp Gly Ser Asn Pro Tyr Phe Arg Gly Ser Tyr Ser Tyr Thr
420 425 430

Gln Val Gly Ser Ser Gly Ala Asp Val Glu Lys Leu Ala Lys Pro Leu
435 440 445

Pro Tyr Thr Glu Ser Ser Lys Thr Ala His Gly Ser Ser Thr Lys Gln
450 455 460

Gln Pro Gly His Leu Phe Ser Ser Lys Cys Pro Glu Gln Pro Leu Asp
465 470 475 480

Ala Asn Arg Gly Ala Val Lys Pro Met Gln Val Leu Phe Ser Gly Glu
485 490 495

Ala Thr His Arg Lys Tyr Tyr Ser Thr Thr His Gly Ala Leu Leu Ser
500 505 510

Gly Gln Arg Glu Ala Ala Arg Leu Ile Glu Met Tyr Arg Asp Leu Phe
515 520 525

Gln Gln Gly Thr
530

<210> 9
<211> 1073
<212> DNA
<213> Homo sapiens

<400> 9
cgccgctcgc cgcagactta cttccccggc tcagcagggg aaggttccta gaaggtgagc 60
gcggacggta tgcaaagttg tgaatccagt ggtgacagtg cggatgaccc tctcagtcgc 120
ggcctacgga gaaggggaca gcctcgtgtg gtggtgatcg gcgccggctt ggctggcctg 180
gctgcagcca aagcacttct tgagcagggg ttcacggatg tctgtgtgct tgaggcttcc 240
agccacgtcg gaggccgtgt gcagagtgtg aaacttggac acgccacctt tgagctggga 300

sequence listing.ST25.txt

```

gccacctgga tccatggctc ccatgggaac cctatctatc atctagcaga agccaacggc 360
ctcctggaag agacaaccga tggggaacgc agcgtgggcc gcacagcct ctattccaag 420
aatggcgtgg cctgctacct taccaaccac ggccgcagga tccccaagga cgtggttgag 480
gaattcagcg atttatacaa cgaggtctat aacttgaccc aggagttctt ccggcacgat 540
aaaccagtca atgctgaaag tcaaaatagc gtgggggtgt tcacccgaga ggaggtgcgt 600
aaccgcatca ggaatgaccc tgacgacca gaggctacca agcgcctgaa gctcgccatg 660
atccagcagt acctgaaggt ggagagctgt gagagcagct cacacagcat ggacgaggtg 720
tccctgagcg ctttcgggga gtggaccgag atccccggcg ctcaccacat catcccctcg 780
ggcttcatgc gggttgcgga gctgctggcg gagggcatcc ctgcccacgt catccagcta 840
gggaaacctg tccgctgcat tcaactgggac caggcctcag cccgccccag aggccctgag 900
attgagcccc ggggtgaggg cgaccacaat cagcacaccg gggaggggtg ccaggggtgga 960
gaggagcccc tagctgccgt gtgctcctgc cttcctgata ctctgtagaa aggattttta 1020
tcttctgtag agctagccgc cctgactgcc ttcagacctg gccctgtagc ttt 1073

```

```

<210> 10
<211> 312
<212> PRT
<213> Homo sapiens

```

<400> 10

```

Met Gln Ser Cys Glu Ser Ser Gly Asp Ser Ala Asp Asp Pro Leu Ser
1          5          10          15

```

```

Arg Gly Leu Arg Arg Arg Gly Gln Pro Arg Val Val Val Ile Gly Ala
20          25          30

```

```

Gly Leu Ala Gly Leu Ala Ala Ala Lys Ala Leu Leu Glu Gln Gly Phe
35          40          45

```

```

Thr Asp Val Thr Val Leu Glu Ala Ser Ser His Val Gly Gly Arg Val
50          55          60

```

```

Gln Ser Val Lys Leu Gly His Ala Thr Phe Glu Leu Gly Ala Thr Trp
65          70          75          80

```

```

Ile His Gly Ser His Gly Asn Pro Ile Tyr His Leu Ala Glu Ala Asn
85          90          95

```

```

Gly Leu Leu Glu Glu Thr Thr Asp Gly Glu Arg Ser Val Gly Arg Ile
100         105         110

```

sequence listing.ST25.txt

Ser Leu Tyr Ser Lys Asn Gly Val Ala Cys Tyr Leu Thr Asn His Gly
115 120 125

Arg Arg Ile Pro Lys Asp Val Val Glu Glu Phe Ser Asp Leu Tyr Asn
130 135 140

Glu Val Tyr Asn Leu Thr Gln Glu Phe Phe Arg His Asp Lys Pro Val
145 150 155 160

Asn Ala Glu Ser Gln Asn Ser Val Gly Val Phe Thr Arg Glu Glu Val
165 170 175

Arg Asn Arg Ile Arg Asn Asp Pro Asp Asp Pro Glu Ala Thr Lys Arg
180 185 190

Leu Lys Leu Ala Met Ile Gln Gln Tyr Leu Lys Val Glu Ser Cys Glu
195 200 205

Ser Ser Ser His Ser Met Asp Glu Val Ser Leu Ser Ala Phe Gly Glu
210 215 220

Trp Thr Glu Ile Pro Gly Ala His His Ile Ile Pro Ser Gly Phe Met
225 230 235 240

Arg Val Ala Glu Leu Leu Ala Glu Gly Ile Pro Ala His Val Ile Gln
245 250 255

Leu Gly Lys Pro Val Arg Cys Ile His Trp Asp Gln Ala Ser Ala Arg
260 265 270

Pro Arg Gly Pro Glu Ile Glu Pro Arg Gly Glu Gly Asp His Asn His
275 280 285

Asp Thr Gly Glu Gly Gly Gln Gly Gly Glu Glu Pro Leu Ala Ala Val
290 295 300

Cys Ser Cys Leu Pro Asp Pro Leu
305 310

<210> 11
<211> 1171
<212> DNA
<213> Homo sapiens

<400> 11
cgccgctcgc cgcagactta cttccccggc tcagcagga aaggttccta gaaggtgagc 60
gcggaacgga tgcaaagttg tgaatccagt ggtgacagt cggatgaccc tctcagtcgc 120
ggcctacgga gaaggggaca gcctcgtgtg gtggtgatcg ggcgggctt ggctggcctg 180
Page 14

sequence listing.ST25.txt

```

gctgcagcca aagcacttct tgagcagggg ttcacggatg tcaactgtgct tgaggcttcc 240
agccacgtcg gaggccgtgt gcagagtgtg aaacttggac acgccacctt tgagctggga 300
gccacctgga tccatggctc ccatgggaac cctatctatc atctagcaga agccaacggc 360
ctcctggaag agacaaccga tggggaacgc agcgtgggcc gcatcagcct ctattccaag 420
aatggcgtgg cctgctacct taccaaccac ggccgcagga tccccaagga cgtggttgag 480
gaattcagcg atttatacaa cgaggtctat aacttgaccc aggagtcttt ccggcacgat 540
aaaccagtca atgctgaaag tcaaaatagc gtgggggtgt tcacccgaga ggaggtgcgt 600
aaccgcatca ggaatgaccc tgacgacca gaggccacca agcgcctgaa gctcgccatg 660
atccagcagt acctgaaggt ggagagctgt gagagcagct cacacagcat ggacgaggtg 720
tccctgagcg ccttcgggga gtggaccgag atccccggcg ctcaccacat catcccctcg 780
ggcttcatgc gggttgtgga gctgctggcg gagggcattc ctgcccacgt catccagcta 840
gggaaacctg tccgctgcat tcaactggac caggcctcag cccgccccag aggccctgag 900
attgagcccc ggggtgaggg cgaccacaat cacgacactg gggaggggtg ccaggggtgt 960
gaggctgccc gcctcattga gatgtaccga gacctcttc agcaggggac ctgagggctg 1020
tcctcgtgct tgagaagagc cactaactcg tgacctccag cctgcccctt gctgccgtgt 1080
gctcctgcct tcctgatcct ctgtagaaag gatttttatc ttctgtagag ctagccgccc 1140
tgactgcctt cagacctggc cctgtagctt t 1171

```

<210> 12
 <211> 314
 <212> PRT
 <213> Homo sapiens

<400> 12

Met Gln Ser Cys Glu Ser Ser Gly Asp Ser Ala Asp Asp Pro Leu Ser
 1 5 10 15

Arg Gly Leu Arg Arg Arg Gly Gln Pro Arg Val Val Val Ile Gly Ala
 20 25 30

Gly Leu Ala Gly Leu Ala Ala Ala Lys Ala Leu Leu Glu Gln Gly Phe
 35 40 45

Thr Asp Val Thr Val Leu Glu Ala Ser Ser His Val Gly Gly Arg Val
 50 55 60

Gln Ser Val Lys Leu Gly His Ala Thr Phe Glu Leu Gly Ala Thr Trp
 65 70 75 80

sequence listing.ST25.txt

Ile His Gly Ser His Gly Asn Pro Ile Tyr His Leu Ala Glu Ala Asn
85 90 95

Gly Leu Leu Glu Glu Thr Thr Asp Gly Glu Arg Ser Val Gly Arg Ile
100 105 110

Ser Leu Tyr Ser Lys Asn Gly Val Ala Cys Tyr Leu Thr Asn His Gly
115 120 125

Arg Arg Ile Pro Lys Asp Val Val Glu Glu Phe Ser Asp Leu Tyr Asn
130 135 140

Glu Val Tyr Asn Leu Thr Gln Glu Phe Phe Arg His Asp Lys Pro Val
145 150 155 160

Asn Ala Glu Ser Gln Asn Ser Val Gly Val Phe Thr Arg Glu Glu Val
165 170 175

Arg Asn Arg Ile Arg Asn Asp Pro Asp Asp Pro Glu Ala Thr Lys Arg
180 185 190

Leu Lys Leu Ala Met Ile Gln Gln Tyr Leu Lys Val Glu Ser Cys Glu
195 200 205

Ser Ser Ser His Ser Met Asp Glu Val Ser Leu Ser Ala Phe Gly Glu
210 215 220

Trp Thr Glu Ile Pro Gly Ala His His Ile Ile Pro Ser Gly Phe Met
225 230 235 240

Arg Val Val Glu Leu Leu Ala Glu Gly Ile Pro Ala His Val Ile Gln
245 250 255

Leu Gly Lys Pro Val Arg Cys Ile His Trp Asp Gln Ala Ser Ala Arg
260 265 270

Pro Arg Gly Pro Glu Ile Glu Pro Arg Gly Glu Gly Asp His Asn His
275 280 285

Asp Thr Gly Glu Gly Gly Gln Gly Gly Glu Ala Ala Arg Leu Ile Glu
290 295 300

Met Tyr Arg Asp Leu Phe Gln Gln Gly Thr
305 310

<210> 13
<211> 943
<212> DNA

sequence listing.ST25.txt

<213> Homo sapiens

<400> 13

```
cgccgctcgc cgcagactta cttccccggc tcagcagggg aaggttccta gaaggtgagc      60
gcggaacgga tgcaaagttg tgaatccagt ggtgacagtg cggatgaccc tctcagtcgc      120
ggcctacgga gaaggggaca gcctcgtgtg gtggtgatcg gcgccggcct ggctggcctg      180
gctgccatcc accgcctggg cattggcacc accgacaaga tctttctgga attcgaggag      240
cccttctggg gccctgagtg caacagccta cagtttgtgt gggaggacga agcggagagc      300
cacaccctca cctaccaccc tgagctctgg taccgcaaga tctgcggcct tgatgtcctc      360
taccgcctg agcgctacgg catgtgtgtg agcggctgga tctgcgggga ggaggccctc      420
gtcatggaga agtgtgatga cgaggcagtg gccgagatct gcacggagat gctgcgtcag      480
ttcacaggga accccaacat tccaaaacct cggcgaatct tgcgctcggc ctggggcagc      540
aacccttact tccgcggctc ctattcatac acgcaggtgg gctccagcgg ggcggatgtg      600
gagaagctgg ccaagccccct gccgtacaca gagagctcaa agacagcgcc catgcgggtg      660
ctgttttccg gtgaggccac ccaccgcaag tactattcca ccaccacgg tgctctgctg      720
tccggccagc gtgaggctgc ccgcctcatt gagatgtacc gagacctctt ccagcagggg      780
acctgagggc tgtcctcgct gctgagaaga gccactaact cgtgacctcc agcctgcccc      840
ttgctgccgt gtgctcctgc cttcctgatc ctctgtagaa aggattttta tcttctgtag      900
agccagccgc cctgactgcc ttcagacctg gccctgtagc ttt                               943
```

<210> 14

<211> 238

<212> PRT

<213> Homo sapiens

<400> 14

```
Met Gln Ser Cys Glu Ser Ser Gly Asp Ser Ala Asp Asp Pro Leu Ser
1          5          10          15
```

```
Arg Gly Leu Arg Arg Arg Gly Gln Pro Arg Val Val Val Ile Gly Ala
20          25          30
```

```
Gly Leu Ala Gly Leu Ala Ala Ile His Arg Leu Gly Ile Gly Thr Thr
35          40          45
```

```
Asp Lys Ile Phe Leu Glu Phe Glu Glu Pro Phe Trp Gly Pro Glu Cys
50          55          60
```

```
Asn Ser Leu Gln Phe Val Trp Glu Asp Glu Ala Glu Ser His Thr Leu
65          70          75          80
```

sequence listing.ST25.txt

Thr Tyr Pro Pro Glu Leu Trp Tyr Arg Lys Ile Cys Gly Phe Asp Val
85 90 95

Leu Tyr Pro Pro Glu Arg Tyr Gly His Val Leu Ser Gly Trp Ile Cys
100 105 110

Gly Glu Glu Ala Leu Val Met Glu Lys Cys Asp Asp Glu Ala Val Ala
115 120 125

Glu Ile Cys Thr Glu Met Leu Arg Gln Phe Thr Gly Asn Pro Asn Ile
130 135 140

Pro Lys Pro Arg Arg Ile Leu Arg Ser Ala Trp Gly Ser Asn Pro Tyr
145 150 155 160

Phe Arg Gly Ser Tyr Ser Tyr Thr Gln Val Gly Ser Ser Gly Ala Asp
165 170 175

Val Glu Lys Leu Ala Lys Pro Leu Pro Tyr Thr Glu Ser Ser Lys Thr
180 185 190

Ala Pro Met Arg Val Leu Phe Ser Gly Glu Ala Thr His Arg Lys Tyr
195 200 205

Tyr Ser Thr Thr His Gly Ala Leu Leu Ser Gly Gln Arg Glu Ala Ala
210 215 220

Arg Leu Ile Glu Met Tyr Arg Asp Leu Phe Gln Gln Gly Thr
225 230 235

<210> 15
<211> 451
<212> DNA
<213> Homo sapiens

<400> 15
cgccgctcgc cgcagactta cttccccggc tcagcagggg aaggttccta gaaggtgagc 60
gcggacggta tgcaaagttg tgaatccagt ggtgacagtg cggatgtgga gaagctggcc 120
aagcccctgc cgtacacgga gagctcaaag acagcgccca tgcaggtgct gttttccggt 180
gagggcaccc accgcaagta ctattccacc acccacggtg ctctgctgtc cggccagcgt 240
gaggctgccc gcctcattga gatgtaccga gacctcttc agcaggggac ctgagggctg 300
tcctcgtgc tgagaagagc cactaactcg tgacctccag cctgcccctt gctgccgtgt 360
gctcctgcct tcctgatcct ctgtagaaag gatttttatc ttctgtagag ccagccgccc 420
tgactgcctt cagacctggc cctgtagctt t 451

sequence listing.ST25.txt

<210> 16
 <211> 74
 <212> PRT
 <213> Homo sapiens

<400> 16

Met Gln Ser Cys Glu Ser Ser Gly Asp Ser Ala Asp Val Glu Lys Leu
 1 5 10 15

Ala Lys Pro Leu Pro Tyr Thr Glu Ser Ser Lys Thr Ala Pro Met Gln
 20 25 30

Val Leu Phe Ser Gly Glu Ala Thr His Arg Lys Tyr Tyr Ser Thr Thr
 35 40 45

His Gly Ala Leu Leu Ser Gly Gln Arg Glu Ala Ala Arg Leu Ile Glu
 50 55 60

Met Tyr Arg Asp Leu Phe Gln Gln Gly Thr
 65 70

<210> 17
 <211> 12
 <212> DNA
 <213> Homo sapiens

<400> 17

ggaaaggtac gg

12

<210> 18
 <211> 12
 <212> DNA
 <213> Homo sapiens

<400> 18

ctgcaggttc ct

12

<210> 19
 <211> 12
 <212> DNA
 <213> Homo sapiens

<400> 19

aacttggtaa gt

12

<210> 20
 <211> 12
 <212> DNA
 <213> Homo sapiens

<400> 20

cctcaggaca cg

12

sequence listing.ST25.txt

<210> 21
 <211> 12
 <212> DNA
 <213> Homo sapiens

<400> 21
 aacgaggtaa gg 12

<210> 22
 <211> 12
 <212> DNA
 <213> Homo sapiens

<400> 22
 tggcaggtct at 12

<210> 23
 <211> 12
 <212> DNA
 <213> Homo sapiens

<400> 23
 ctgaaggat ct 12

<210> 24
 <211> 12
 <212> DNA
 <213> Homo sapiens

<400> 24
 ccgcaggtgg ag 12

<210> 25
 <211> 12
 <212> DNA
 <213> Homo sapiens

<400> 25
 tcacaggtgc gc 12

<210> 26
 <211> 12
 <212> DNA
 <213> Homo sapiens

<400> 26
 catcagggaa cc 12

<210> 27
 <211> 12
 <212> DNA
 <213> Homo sapiens

<400> 27
 acagcggtaa gc 12

sequence listing.ST25.txt

<210> 28
 <211> 12
 <212> DNA
 <213> Homo sapiens

<400> 28
 ccgcagccca tg 12

<210> 29
 <211> 24
 <212> DNA
 <213> Artificial

<220>
 <223> synthetic oligonucleotide primer

<400> 29
 cgccgctcgc cgcagactta cttc 24

<210> 30
 <211> 24
 <212> DNA
 <213> Artificial

<220>
 <223> synthetic oligonucleotide primer

<400> 30
 aaagctacag ggccaggtct gaag 24

<210> 31
 <211> 31
 <212> DNA
 <213> Artificial

<220>
 <223> synthetic oligonucleotide primer

<400> 31
 tcggcgccat atgcaaagtt gtgaatccag t 31

<210> 32
 <211> 31
 <212> DNA
 <213> Artificial

<220>
 <223> synthetic oligonucleotide primer

<400> 32
 attactcgag agttagtggc tcttctcagc a 31

<210> 33
 <211> 25
 <212> DNA
 <213> Artificial

<220>

<223> synthetic oligonucleotide primer

<400> 33
gatcccggcg gaccatgtga ttgtg 25

<210> 34
<211> 24
<212> DNA
<213> Artificial

<220>
<223> synthetic oligonucleotide primer

<400> 34
ctcaggcggg tagaggacat caaa 24

<210> 35
<211> 21
<212> DNA
<213> Artificial

<220>
<223> synthetic oligonucleotide primer

<400> 35
gccccggggt gtgctaaaga g 21

<210> 36
<211> 21
<212> DNA
<213> Artificial

<220>
<223> synthetic oligonucleotide primer

<400> 36
cctgcatggg cgctgtcttt g 21

<210> 37
<211> 24
<212> DNA
<213> Artificial

<220>
<223> synthetic oligonucleotide primer

<400> 37
cgcagactta cttccccggc tcag 24

<210> 38
<211> 24
<212> DNA
<213> Artificial

<220>
<223> synthetic oligonucleotide primer

<400> 38

ctgcatgggc tggttgtata aatc

<210> 39
 <211> 24
 <212> DNA
 <213> Artificial

<220>
 <223> synthetic oligonucleotide primer

<400> 39
 ggatgctaac aggggcgccg taaa

24

<210> 40
 <211> 25
 <212> DNA
 <213> Artificial

<220>
 <223> synthetic oligonucleotide primer

<400> 40
 gcagagcacc gtgggtggtg gaata

25

<210> 41
 <211> 13
 <212> PRT
 <213> Artificial

<220>
 <223> Hydrophilic synthetic peptide based on sequences of the PAOh1/SMO protein

<400> 41

Glu Glu Pro Arg Gly Gly Arg Trp Asp Glu Asp Glu Gln
 1 5 10

<210> 42
 <211> 13
 <212> PRT
 <213> Artificial

<220>
 <223> Hydrophilic synthetic peptide based on sequences of the PAOh1/SMO protein

<400> 42

Glu Glu Val Arg Asn Arg Ile Arg Asn Asp Pro Asp Asp
 1 5 10